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Induced and Spontaneous Labor Education: Evaluation, Knowledge, and Intent to Discuss Options in Pregnant Women

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Author's Note

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Abstract

Labor inductions are increasing worldwide, with rates continuing to rise each year. Currently 30% of labors in the United States result from inductions. The purpose of the study was to examine the effect of an educational intervention about induced and spontaneous labor on knowledge and intent to discuss options with health providers in pregnant women. This study was guided by the health-belief model which explains that people's beliefs about how a health care decision may affect their lives affect how they make the decisions. This study was conducted using a quantitative and descriptive design with pre and post paper and pencil survey data collection. Thirty women participated in the study; approximately 73% of subjects were 25-34 years old, approximately 93% were white with 7% black. The educational class was conducted by childbirth educators. Approximately 50% of women agreed that the information provided by the childbirth class was unbiased and approximately 46% strongly agreed it was unbiased. Approximately 48% of women agreed and approximately 48% of women strongly agreed that the educational material regarding induced and spontaneous labor was easy to understand. Approximately 52% of women agreed and approximately 45% strongly agreed that they felt more prepared to make a decision regarding labor options. Approximately 41% agreed and approximately 14% strongly agreed that they were intending to ask their health care provider for more information. Overall, women felt more prepared to make labor decisions after attending the childbirth education class, felt they were provided unbiased information, and intended to seek more information regarding their labor options.

Spontaneous labor is the natural process of contractions and childbirth (Ladewig, London, & Davidson, 2014). Induced labor or induction is the "stimulation of uterine contractions before the spontaneous onset of labor, with or without ruptured fetal membranes, for the purpose of accomplishing birth" (Ladewig et al., 2014, p. 463). Since pregnant women participate in selecting birthing methods, selection of induction may result from various factors, including ineffective communication about options to pregnant women, lack of description of pros and cons, bias from healthcare providers, and lack of resources when making decisions about the birthing process (Stevens & Miller, 2012). Although there is high prevalence of labor inductions at 26.2% in 2008 in the United States (Patterson, Roberts, Ford, & Morris, 2011), approximately 25% in Australia, and in Europe rates range from as low as 9% to approximately 30% (Grivell, Reilly, Oakey, Chan, & Dodd, 2011). Approximately 50% of women have reported that they did not receive enough information to make an informed decision about birthing plans and that all of the complications were not adequately explained to them before making a decision (Declercq, Sakala, Corry, & Applebaum, 2007; Henderson & Redshaw, 2013; Lothian, 2007; Simpson, Newman, & Chirino, 2010; Stevens & Miller, 2012). Pregnant women those physicians offered labor induction or suggested an elective induction were more likely to choose inductions if they did not attend childbirth classes. Those who attended classes were less likely to be induced (Lothian, 2007; Simpson et al., 2010).

The purpose of this study was to explore the effect of an educational class about induced and spontaneous labor on evaluation, knowledge, and intent to discuss options in pregnant women. This study aims to answer the following research questions: What is the evaluation of an education class about induced and spontaneous delivery in pregnant women? What is the effect of an education class about induced and spontaneous delivery on knowledge in pregnant

women? What is the effect of an education class about induced and spontaneous delivery on intent to discuss options in pregnant women?

Review of Literature

Naturally occurring or spontaneous labor is mediated by factors controlled by the fetus, the placenta, the membranes, and maternal hormones (Romano & Lothian, 2008). Contraindications to spontaneous labor include active genital herpes infection, placental previa, transverse fetal lie, and macrosomia (Ladewig et al., 2014). Induced labor or induction, which results from the intentional stimulation of uterine contractions before the spontaneous onset of labor, includes cervical ripening, which is the softening and effacing of the cervix to induce labor (Ladewig et al., 2014). Labors may be induced with medications, such as Pitocin, and techniques such as using a balloon from a Foley catheter, or by rupturing the amniotic sac (Henderson & Redshaw, 2013). Indications for labor induction include, but are not limited to, Diabetes mellitus, pre-eclampsia, eclampsia, premature rupture of membranes, post-term gestation greater than 42 weeks, non-reassuring fetal status, and intrauterine fetal growth restriction (Ladewig et al., 2014). Induction is contraindicated in placental previa, transverse fetal lie, active genital herpes infection, umbilical cord prolapse, and previously ruptured uterus (Ladewig et al., 2014).

Prevalence of Inductions

The prevalence of inductions has increased from 18.6% in 1990 to 26.2% in 2008 (Patterson, Roberts, Ford, & Morris, 2011), with the inductions for no medical reason (elective) increasing at a greater rate than those that medically indicated (Jonsson, Cnattingius, & Wikstrom, 2013). Rates of induction are higher amongst the non-Hispanic white women than

the non-Hispanic black women (Chauhan & Ananth, 2012). Women who typically experience spontaneous labor were younger and more likely to have a lower socioeconomic status (Patterson et al., 2011). If given the opportunity, 50% of women said that they would be induced due to psychological factors and previous obstetrical complications (Chauhan & Ananth, 2012). Factors associated with increased rates of induction include: fetal growth restriction, premature rupture of membranes, preeclampsia, post-date pregnancy, and elective inductions (Thorsell, Lyrenas, Andolf, & Kaijser, 2011). Nullipara women who have a labor induction require assisted delivery about 55% of the time (Patterson et al., 2011).

Patient Education

Researchers have consistently found that for women to make informed decisions about birthing plans, full information without bias or direction is essential (Declercq et al., 2007; Fisch, English, Pedaline, Brooks, & Simhan, 2009; Henderson & Redshaw, 2013; Lothian, 2007; Romano & Lothian, 2008; Simpson et al., 2010; Stevens & Miller, 2012). Approximately 50% of women have reported that they did not receive enough information to make an informed decision about birthing plans and that all of the complications should be explained to them more completely before making their decision (Declercq et al., 2007; Henderson & Redshaw, 2013; Lothian, 2007; Simpson et al., 2010; Stevens & Miller, 2012). Lothian (2007) found that women who were induced were less satisfied with their care compared with mothers who weren't induced because they felt they were not told adequate information about what was going on. They also thought they were not included in medical decisions, which were made for them by the physicians and outside of their control (Lothian, 2007).

An important resource for pregnant women to utilize in making birthing choices is childbirth classes. Approximately 63% of those who attended childbirth classes and were not induced reported that childbirth educators were important in helping them to make this decision (Simpson et al., 2010). Researchers have found that pregnant women view childbirth educators as unbiased, helpful, informative, and helpful to reinforce previous information (Simpson et al., 2010). Simpson et al. (2010) found that approximately 57% of women who did not attend classes wished they had had more information regarding labor induction. Lothian (2007) found that all mothers that attended birthing classes and mothers who did not attend birthing classes expressed that they would like to be given more information about the complications of inductions, cesareans, and epidurals. If they could not get more information through the classes and medical professions, they wanted more information available on the internet in simple terms (Lothian, 2007).

Physicians are split as to whether they were supportive of inductions or spontaneous labor. Those who are supportive of spontaneous labor believed in letting the body do what it is designed to do and letting nature take its course (Simpson et al., 2010). The popular reasons that physicians recommend inductions are post-term, macrosomia, patient discomfort, risk for baby, and convenience (Simpson et al., 2010). Stevens & Miller (2012) found that pregnant women who received directive information from physicians were more partial to inductions, especially in those with high trust in medical professionals. To decrease the use of inductions amongst physician, some researchers have suggested increased education about maternal and neonatal outcomes for pregnant women (Declercq et al., 2007; Fisch et al., 2009). Fisch et al. (2009) found that standardized care practices regarding inductions helped decrease elective inductions rates at Magee- Women's hospital from 9.1% to 6.4%. By presenting the information as a way

to insure the optimal outcome for the mother and fetus, less resistance is met by the physicians and other staff members (Fisch et al., 2009).

The studies regarding outcomes for labor induction are still under speculation due to inadequate sample sizes, varying methods for data collection, and the lack of randomization. Research regarding patient education about the induction process and birth options is still a relatively new area of research, thus the studies where limited in number which restricted any comparison that could be speculated. The samples for most of the studies were limited by sample size, availability of participants, and did not adequately address a multitude of variables. There is a significant gap in knowledge about obstetrical outcomes and procedures as well as the thoughts and views of the women that are subjected to obstetrical care and the birthing process.

Theoretical Framework

This study was guided by the health-belief model. This model looks at how people perceived an outcome to an intervention will affect how they make their medical decisions. If the individual perceives that there will be a negative health outcome that they are susceptible to, then they will do whatever they can to avoid this outcome (Carpenter, 2010). For example, a person who is taught all of the negative outcomes of choosing an elective induction instead of having a spontaneous labor would be more willing to choose a spontaneous labor over an induction. Whereas the person who receives no education about the outcomes and does not know any of the negative outcomes might be more willing to choose an induction if given the option.

This model looks at four different variables that can predict the behavior of the person and what decisions he or she is going to make in regards to health care (Carpenter, 2010). The first predictor is that people will be more likely to act in a healthy way if they think they are

susceptible to the negative health outcomes (Carpenter, 2010). The second predictor looks at the severity of the negative health outcome, the worse the outcome the more motivated they are to avoid the outcome (Carpenter, 2010). If the individual perceives the targeted behavior to have a positive benefit that will help prevent the negative outcome then they will chose the targeted behavior (Carpenter, 2010). Finally, even if the individual wants to choose the targeted behaviors if there are strong barriers that prevent them from adopting these behaviors they will unlikely choose the targeted behavior (Carpenter, 2010).

Methods

Design

The study used an observational, non-experimental, pre-test/post-test design to examine the outcomes of a childbirth education session about induced and spontaneous labor. The specific aims of this study were to examine how the childbirth education class was evaluated by pregnant women, as well as how the class affected knowledge about labor options and intent to discuss options with healthcare providers. Recruitment and data collection started after the hospital institutional review board approved the study.

Site and Sample

This study surveyed a convenience sample of pregnant women attending basic childbirth education classes held at an urban hospital associated teaching facility located in the Midwest of the United States. The sample inclusion criteria included women between the age of 18-64 years, pregnant women, and volunteers in attendance of the childbirth education classes. Exclusion criteria for the study included being under the age of 18, male, and unable to read English.

Sampling and Data Collection Procedures

Participants were recruited by approaching them at a time before and after the specific childbirth education class discussing labor inductions. The research team described the purpose of the study, the procedures, the rights of human subjects, and the risks of participation, asking any questions potential participants had. Informed consent was given by the participants through the completion of the survey. Once informed consent was obtained, data collection started with the first collection occurring before the childbirth education class about labor options.

Data were collected with pre and post class printed surveys, distributed before and after the childbirth education class discussing labor options. Surveys were directly given to each subject who then returned the completed surveys directly to members of the research team. The surveys were completed by the participants in the class room at the end of the class. The pre-test and post-test surveys each took approximately ten minutes to complete. The surveys will be stored in a locked file at Summa Akron City Hospital in the Women's Health Research department. The surveys will be destroyed at the completion of the study.

Measures

In order to measure the evaluation of the childbirth education class, the women were asked questions regarding how they felt about the information provided to them during the class. The answers were based on a Likert scale with strongly disagree receiving a lower number indicating a negative response and strongly agree receiving the highest number indicating a positive response.

To measure the outcome of knowledge the women were asked questions regarding their feelings of preparedness, differing knowledge, and decision making. The answers were a Likert

scale with strongly disagree receiving the lowest number to indicate negative response and strongly agree receiving the highest number indicating a positive response.

Intent to discuss was measured by asking the women directly if they planned on asking their health care provider more information regarding labor options. The answers were a Likert scale with strongly disagree receiving the lowest number indicating a more negative response and strongly agree receiving the highest number indicating a more positive response.

In this study age was divided into categories with ten year ranges. Race and ethnicity was measured with basic, generalized groups and was self-reported. Education levels from no high school thru doctorate degrees were categorized to assess the average education level of the group. Number of pregnancies was assessed by listing numeric values one thru five or more. Health status of the group was assessed using the Global Health Status questionnaire.

Data Analysis Plan

All data were entered into an Excel data file and then imported into IBM SPSS 22, a software statistical analysis program. Descriptive statistics were used to describe the sample and variables of evaluation, knowledge, and intent to discuss. Percentages were calculated to describe nominal and ordinal level data. Means and standard deviations were calculated to describe summed ordinal scales, and internal/ratio level data.

Results

During this survey 30 pregnant women were surveyed. Approximately 73% were between the ages of 25-34 years, approximately 13% were between 16-24 years, and approximately 13% were between 35-44 years. Approximately 93% of the women were white

and approximately 7% were black. The majority of subjects had bachelor degrees (27%), followed by some reporting some college (20%). Approximately 13% reported high school education with 13% also reported associate degrees. The remaining subjects reported master degrees (17%) and doctorate degrees (10%). Married and domestic partnership relationships were approximately 87% of the population and approximately 13% of women were single. 90% of the women were pregnant with their first child, while the other 10% were pregnant with their second. 68% of subjects reported general health scores between 39 to 49 (m=44, sd=5.19).

Regarding labor induction education, approximately 50% of women agreed that the information provided by the childbirth class was unbiased, approximately 46% strongly agreed it was unbiased, and approximately 4% disagreed the information was unbiased. Approximately 57% of women agreed that the information presented on spontaneous labor was unbiased, approximately 36% strongly agreed, and approximately 7% disagreed. Approximately 48% of women agreed and approximately 48% strongly agreed that the educational material regarding induced and spontaneous labor was easy to understand and approximately 3% of women disagreed.

After attending the childbirth education class approximately 52% of women agreed and approximately 45% strongly agreed that they felt more prepared to make a decision regarding labor options. Approximately 3% of the women strongly disagreed that they felt more prepared to make a decision regarding labor options. Approximately 21% of women disagreed and around 7% strongly disagreed that the information presented at the childbirth class regarding labor induction was different from what they already knew. Approximately 21% of women agreed and around 10% strongly agreed that the information presented was different from what they previously knew about labor induction and the remaining women, approximately 41%,

remained neutral. Approximately 24% of women agreed and approximately 3% strongly agreed that the information presented helped them form a different decision for labor choices, while approximately 21% disagreed, approximately 14% strongly disagreed, and approximately 38% remained neutral.

When asked if they planned on discussing labor options with their health care provider after being provided with the information from the childbirth class approximately 41% agreed and approximately 14% strongly agreed that they would. Approximately 21% disagreed and approximately 7% strongly disagreed that they would ask their health care provider more information regarding child birth options. Approximately 17% of women remained neutral on their intent to discuss options with their health care provider.

Approximately 38% of women strongly disagreed and approximately 28% disagreed that they felt their health care provider was deciding the labor options. Approximately 97% of women reported they were not planning on having an induction and approximately 16% would induce if the health care provider was concerned for the baby's health and approximately 5% would induce if the health care provider was concerned for their health.

Discussion

This study revealed that women tend to feel that childbirth education classes provide unbiased information regarding labor options which was similar to the study conducted by Simpson et al. (2010) who found that women generally view childbirth educators as unbiased sources. Women in this study felt more prepared to make labor decisions. In previous studies women had better birth outcomes when they felt they were more prepared for the childbirth process. Another key finding was that women were more inclined to seek further information

from their healthcare provider, which is comparative to Lothian (2007) who found that women wanted to seek more information related to the complications of different labor and birth options. A majority of women in this study reported that they did not feel like their health care provider was the main decision- maker in labor choices, which differs from previous studies reporting that women felt as if they had lost control of making choices. The childbirth education class used in this study had an overall positive reaction with women feeling more informed, better prepared, and more inclined to ask their health care provider for more information. According to Lothian (2007) and Simpson et al. (2010) women who were more informed through education were less likely to be induced when health care providers offer it as a labor option.

These findings did follow the health-belief model in that the women felt more informed about their decisions for labor because they were taught the positives and negatives in an environment they perceived as unbiased. Knowing possible outcomes will guide their decision making in that they will avoid the possible negative outcomes based on their perceived knowledge. Approximately 97% of women in this study reported that they are not planning on having their labor induced, but some of them would induce if there was a perceived risk to the baby or to their health.

This study was limited in sample size and diversity. To gain a better understanding of women's feelings regarding their knowledge of labor choices, intent to discuss, and thoughts about child birth education classes the sample size needs to be larger in size and have a wider range of women in different socioeconomic classes, race and ethnicity, age, and childbirth classes; not just hospital based classes. The women surveyed primarily lived in an urban and city area rather than a rural area.

This area of study still requires more research in order to ensure that women are making informed decisions regarding labor. Evaluating the effectiveness of childbirth education classes will help ensure that women are receiving unbiased and complete information. As health care providers it is important to offer all the information possible regarding both positive and negative outcomes of labor choices. Health care providers should also be aware of personal bias towards labor options and education for health care staff should be available. Making information more accessible and easy to understand will help decrease the amount of pregnant women electing for labor induction when it is not necessarily medically indicated.

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Appendix A
Review of Literature Summary Table

Author(s) (year). Article Title. Categories	**Background of Clinical Problem**	**Purpose statement & PICOT. Study Design.**	**Clinical Practice Setting and Sample.**	**Evidence-based Findings**	**Practice & Research Implications**	**Limitations**
1 Carpenter (2010). A Meta-Analysis of the Effectiveness of Health Belief Model Variables in Predicting Behavior *Secondary, QUAN, LOE I	Trying to understand why people fail to adopt a preventative health measure	Purpose Statement: The purpose of this study was to determine whether measures of health beliefs could longitudinally predict behavior.	A meta-analysis of 18 longitudinal studies that looked at looked at a health-related behavior associated with the patient's beliefs.	There are four variables that predict a person behavior. People will be more motivated to act in healthy ways if they believe they are susceptible to a particular negative health outcome. The more severe the negative health outcome, the more a person will be motivated to act to avoid that	Helps to show that if given all of the information about health decisions people will chose the one that has the better outcome. Helps to also show that there needs to an emphasis on teaching all of the outcomes not just the benefits.	The main limitation to this meta-analysis was the small number of studies. Another limitation of the review is the variety and varying quality of the measures used.

				outcome. The individual must perceive that the target behavior will provide strong positive benefits; the behavior will prevent the negative health outcome. If there are barriers that prevent a person from adopting the targeted behavior, they will be unlikely to do so.		
2 Chauhan & Ananth (2012). Induction of Labor in the United States: A Critical Appraisal of Appropriateness	Nearly 1 in 4 women in the U.S. are being induced with around 1 in 10-12 being induced electively.	The purpose was to review literature that had been completed pertaining to labor inductions in order to	Meta-analysis of information from randomized trials, systemic reviews, meta-analyses, and case studies to determine rates	There are 4 criteria normally used for determining if an induction is appropriate with the most important factor	Informed consent is a very important factor when trying to reduce the amount of inductions performed.	The amount of information to be synthesized is limited to what has been studied and there are not a lot of studies regarding patient

and Reducibility *Primary, QUAN, LOE I		understand how to reduce the rates of inductions in the U.S.	of induction, reason for induction, and alternative options.	being the woman's informed consent. Up to 50 % of women would choose induction and they have psychological reasons for it.	Offering unbiased and factual information is the best thing that can be done.	education and risks associated with inductions.
3 Declercq, Sakala, Corry, & Applebaum (2007). Listening to Mothers II: Report of the Second National U.S. Survey of Women's Childbearing Experiences *Primary, MM, LOE III	There has been a gap in obstetrical care that has been a work in progress.	The purpose of the study was to gain an understanding of what women knew, felt and understood about obstetrical practice. What are the experiences and understanding of expectant mothers and new mothers of the delivery and birth in health	They conducted a national survey of 1573 mothers on their experiences, knowledge, and outcomes of labor and delivery. They were mothers who had single births in hospitals. The survey gathered participants to accurately represent the	11% of mothers felt pressure from their health care provider to have a labor induction, 7% for an epidural, and 9% for a cesarean. Most mothers had an incorrect understanding or were not sure of the complications and risks associated with	Improving the health care providers knowledge base and there is a need to improve women's understanding of obstetrical procedures.	The data that is for a national picture of the country may not be indicative to the population. Women all have unique experiences.

		care in the U.S.?	population of the U.S.	labor inductions and cesarean deliveries.		
4 Fisch, English, Pedaline, Brooks, & Simhan (2009). Labor Induction Process Improvement A Patient Quality-of-Care Initiative *Primary, QUAN, LOE IV	Inductions have been on the rise in the U.S. and some reasons may be because of physician preference, patient preference, and preventative medicine.	To assess the effects that staff education and new scheduling procedures for elective induction and the effect it has on reducing the amount of inductions. Does improved staff education and new scheduling for inductions decrease the amount of inductions for nulliparous women?	Retrospective study that examined scheduled inductions at 3 different time periods to look for any changes in data. The first 2 study periods were studied using the traditional methods of scheduling and no educational intervention. The third study period implanted the scheduling changes and information was added to patient's charts to ensure that risks and	The new guidelines helped decrease the induction rate from 9.4% to 6.4%. By requiring a ripe cervix before scheduling an elective induction the rate of nulliparas requiring a cesarean decreased.	Implementing guidelines to improve quality of patient care is beneficial and effective when supported by the staff. Increased education of staff about inductions and cervical ripening should be encouraged.	The sample size was limited to one institution and one area. The results could not indicate the adverse outcomes and the relationships to inductions.

			complications were understood.			
5 Grivell, Reilly, Oakey, Chan, and Dodd (2011). Maternal and Neonatal Outcomes Following Induction of Labor: a Cohort Study *Primary, QUAN, LOE V	Elective inductions increase the risk for possible need for resuscitation at birth and admission to the neonatal intensive care unit for the new born.	Purpose statement: To evaluate maternal and neonatal outcomes associated with birth at term by week of gestational age and also by onset of labor. Is the an association between the outcomes of the neonate that are term and whether they were born from an induced labor or a spontaneous labor?	28 626 women with spontaneous onset of labor and induction of labor. Both inductions for recognized indications and non-recognized indications (elective). Excludes those who had planned elective cesareans, suffered fetal death in utero or underwent genetic termination of pregnancy.	Inductions for non-recognized indications at term correlated with an increased risk of adverse outcomes. Women were more likely to require and epidural (49.65%) with induction then with spontaneous (31.17)% Labor complications were increase 25.55% for inductions and 14.62% for spontaneous labor.	Women need to be educated as to what the effects of elective inductions have on their babies after delivery.	They did not differentiate between multiparous and parous pregnancies. The population was not accurately represented.

				Fetal death was 0.41% amongst that induction group and only 0.14% with the spontaneous labor group.		
6 Henderson & Redshaw (2013). A Women's Experience of Induction of Labor: a Mixed Methods Study *Primary, MM, LOE III	Induction of labor is a common procedure occurring in about 30% of all pregnancies in the United States. The rates of induction have increased over the past two decades in most countries.	Purpose statement: To investigate a women's experience of induction of labor Women's experience of induction of labor was compared with those who had spontaneous labor by analysis of responses to a survey. Do women who went into labor spontaneously	The study looked at women who gave birth in a two-week period late in 2009. Excluded women whose age was less than 16 years and women whose baby had died.	Women who were induced were less satisfied with the aspects of care and were significantly less likely to have vaginal births. Women who were induced expressed concerns of pain, anxiety in relation to the induction, failed induction, and disappointment. It was found that	Women need to be better informed about what to expect with each type of birth. Medical staff can help to relieve some of the stress and panic of child birth by taking the time to be there for the patients and making sure to communicate with them what is going on.	One limitation would be small sample size Another limitation would be a small time frame of only 2 weeks. It does not allow for you to get an accurate example of the population.

		have a better experience then women who had an induction of labor?		some women would have liked to have been induced earlier; others felt that they were given little choice, and others felt that they have insufficient information about the subject. Women induced experience not being able to move as much, more caregivers, increased in length of labor, though staff was not kind and did not communicate well. This was opposite with women who had spontaneous labor.		

7 Jonsson, Cnattingius, & Wikstrom (2012). Elective Induction of Labor and the Risk of Cesarean Section in Low-risk Parous Women: a cohort study *Primary, QUAN, LOE V	In low-risk parous women, electively induced labor had an increased risk of emergency cesarean section compare with spontaneous onset labor.	Purpose statement: To estimate the association between elective induction of labor and cesarean section in low-risk parous women, and to assess whether the association in influenced by induction method. Are women who are term and have labor induced at a higher risk for cesarean sections then women who spontaneously go into labor?	Parous women without pregnancy complications or previous cesarean section, and with a planned vaginal term, singleton birth, in vertex position.	Failure to progress was the main reason for CS for 23% of spontaneous labor and 52% for induced labor. Elective inductions are associated with a 60% increase in risk of prolonged labor, increased more by cervical ripening.	Women need to be educated about the risks of elective inductions and the different alternatives that they have.	Limited by the ability to assess and control for factors such as maternal height and body mass index. There was no information about the patient's cervical status when the induction was started.
8 Lothian (2007). Listening to Mothers II:	Women have concern that their childbirth	Purpose statement: To look at childbirth	Women who attend childbirth classes	Most women who go to child birthing classes	Birthing classes need to be more informative	Do not know what type of childbirth classes

Knowledge, Decision-making, and Attendance at Childbirth Education Classes *Primary, MM, LOE III	classes do not provide the information they need to make informed decisions during labor and birth.	classes and to assess the information that women are getting. Do childbirth classes properly educate patients about the benefits and risks of both spontaneous labor and the induction of labor?		do not learn what they need to make informed decisions. Women who are not getting the information in classes are having a hard time finding it on their own. They are not getting the information on the side effects of cesarean sections, induction, and epidurals of labors, thus making them make uninformed decisions. There is no	about the risks of inductions, cesarean sections, and epidural use. Information needs to be more readily available and put into laymen terms.	the mothers went to. The only mothers who responded were ones who did not learn the information. There was no information about people who went to good classes.

				statistical difference between the mother's knowledge of those who went to class and those who did not on the subject of cesareans and inductions.		
9 Patterson, Roberts, Ford & Morris (2011). Trends and Outcomes of Induction of Labor among Nullipara at Term. *Primary, QUAN, LOE IV	Induction of nulliparous women is more likely to fail and understanding the trends of inductions, spontaneous labor, and cesarean deliveries may give some insight.	The purpose was to determine induction trends and delivery, maternal and neonatal health outcomes by gestational age following induction at term for women having a first baby. Are adverse maternal and fetal outcomes	Population included 1 561 723 women with a single, cephalic-presenting fetus from 1990 to 2008. Information collected from NSW Midwives Data Collection and NSW Admitted Patients Data Collection, Australia.	The rate of induction increased from 18.6% in 1990 to 26.2% in 2008. 2001–2007, there were 212 389 term nullipara and of these, 132 044 (62.2%) went into spontaneous labor, 67 721 (31.9%) were induced and 12 624 (5.9%) underwent a	Cesarean birth rates could be reduced by changing decision making regarding inductions and by changing clinical practice.	There was a lack of information reported about the other conditions that may have affected labor such as cervical indicators for induction. The sample size is large but may not reflect on all populations.

		higher in nulliparous women undergoing a cesarean delivery or induction compared to those who wait for spontaneous labor?	Information included birth records and hospitalization data related to the birth.	previous caesarean delivery. It is significant that increased induction of labor was not accompanied by improved neonatal or maternal outcomes.		
10 Romano & Lothian (2008). Promoting, Protecting, and Supporting Normal Birth: A Look at the Evidence *Primary, QUAL, LOE IV	Advances in technology have led to increases in medical interventions for birth.	The purpose was to analyze and provide evidence associated with natural births.	Systemic review of literature regarding current practices.	The review of evidence supports that interfering with natural birth increases risks for complications. Lack of improvement of mortality rates with the increase in medical advances shows that more	Teaching should reflect the best evidence available. Women should be taught the implications associated with practices in order to make decisions for or against using those practices.	The review did not present any new data and presented findings to support natural labor. It did have sound information though.

				technology does not mean better.		
11 Simpson & Chirino (2010). Patients' Perspectives on the Role of Prepared Childbirth Education in Decision Making Regarding Elective Labor Induction. *Primary, MM, LOE III	Labor inductions have been on the rise and very little is known about the decision making process that women go through when they make labor decisions.	The purpose was to understand why nulliparous women would choose induction of labor and to learn what would influence their decision. Do childbirth education classes influence a nulliparous woman's decision about birth options such as induction?	The sample is from St. John's Mercy Medical Center. A 40 minute standardized presentation was included in child birthing classes at the hospital and a 23 question survey. The sample included 1349 participants that met criteria and volunteered to participate. Population: nulliparous women, singleton pregnancy, gestation > 37 weeks, live birth, and English-speaking	63% of women who attended classes and did not have an induction reported that the classes were helpful in the decision making process. Women are more likely to have an induction if the physician recommends it. Women who attended classes and were offered inductions were less likely to have one. 57% of women who did not attend wished they would have	More information made available to women can help in the decision process for labor. Nurses can provide unbiased information to aid in a woman's decision making.	The study was conducted in only one hospital, so the demographics might not follow the national average or outcome.

				received more information before consenting to induction.		
12 Stevens & Miller (2012). Overdue Choices: How Information and Role in Decision-Making Influence Women's Preferences for Induction for Prolonged Pregnancy *Primary, MM, LOE III	Current practitioner decision making may not actively involve the patient making care decisions.	The purpose was to investigate the effect of varying communication on women's preferences for induction of labor for prolonged pregnancy. Does the information provided and degree of patient involvement in decision making regarding induction of labor effect the outcome of the choices made by the pregnant woman?	The design researched information delivery, directive or nondirective, and role in decision making, compliance or choice. Questionnaire. The population included 595 females, over the age of 18 and who were not currently pregnant. About 80% of the population was born Australian. The participants were recruited	The odds of preferring induction were significantly greater for those who received directive information (44.4%) than for those who received nondirective information (19.9%). Women who had received directive information did not feel enough information was presented unlike those who had received	Healthcare providers need to maintain an unbiased opinion when presenting information to a patient. Information regarding the risks and the benefits will help the patient make a more informed decision.	It was limited to those who had access to the internet. There was a very broad range of ages included with the oldest being in her 70's. This creates a generational difference. Decision making in real life may be different because of the actual situational difference.

			by e-mail from databases that included them in the category to contact for future research in maternal medicine.	nondirective information. Many women wished that the risks and benefits would have been brought up more.		
13 Thorsell, Lyrenas, Andolf and Kaijser (2011). Induction of Labor and the Risk for Emergency Cesarean Section in Nulliparous and Multiparous Women *Primary, QUAN, LOE V	Reasons for induction include fetal growth restriction, premature rupture of membranes, preeclampsia, post-date pregnancy, and elective inductions.	Purpose statement: To assess the risk for emergency cesarean section among women in whom labor was induced in gestational weeks > 41 weeks Does being induced post-term increase or decrease the risk for the need of a cesarean compared to going into labor spontaneously?	Singleton pregnancies delivered after ≥ 41 weeks gestation	Induction of labor is associated with an increased risk for cesarean section amongst nulliparous women and multiparous women. Inductions of labor are seen in almost 15% of all pregnancies. Threefold increase in risk for cesarean (42%) in induced labor compared to spontaneous	Women need to be educated about the risks of inductions after 41 and how they can end up leading to cesarean sections.	Obstetricians who decide to initiate inductions are more prone to deliver through emergency cesareans. Another limitation was that there was missing data on BMI. There are other differences between women who labor was induced and women with spontaneous

				(17%) onset. An induction at > 41 weeks gestation in women with an unripe cervical status is associated with an increased risk for cesareans.		onset that were not covered in this study.

*Indicate each: (a) Primary (P) or secondary (S) source: (b) Qualitative (QUAL), quantitative (QUAN), or mixed methods (MM). (c) Level of evidence (LOE)

Appendix B

Pre-test Survey

Consent for Participation

The following information is being collected to determine your thoughts and feelings in regards to labor induction and how it had effected your birthing choices. By completing this survey, you are consenting to participate in this study. The survey will take less than 10-minutes to complete. This study will collect the information you provide and evaluate the responses. Your responses will be confidential. You will not be penalized or rewarded for completing this survey. You are asked to answer all questions as honestly as possible and to the best of your ability. Any concerns you may have about this research project can be directed to Dr. Michele L. McCarroll, PhD at 330-375-4880 mccarrollm@summahealth.org or Mary Ann Craig, RN, BSN, 330-375-3173 craigm@summahealth.org. If you have questions regarding your rights as a research subject, please contact the Summa Health System Institutional Review Board at 330-375-4045 or irb@summahealth.org. Thank you!

Demographic Information

This section will ask you basic questions about your demographics.

***1. Study ID**

2. What is your age?

- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64

3. Please specify your race/ethnicity.

- ◯ White/ Caucasian
- ◯ Black/ African American
- ◯ Asian/ Pacific Islander
- ◯ Native American/ Alaskan Native
- ◯ Hispanic/ Latino
- ◯ Other (please specify)

4. What is the highest level of education that you have completed?

- ◯ 8th grade
- ◯ High School/ GED equivalent
- ◯ Some college/ no degree
- ◯ Associate's Degree
- ◯ Bachelor's Degree
- ◯ Master's Degree
- ◯ Doctorate Degree

5. What is your marital status?

- ◯ Single
- ◯ Married/ domestic partnership
- ◯ Divorced
- ◯ Separated
- ◯ Widowed

6. How many pregnancies, including this one, have you had?

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5 or more

Health Status

This section will ask about your health status for physical, mental, and social well–being.

7. In general, would you say your health is

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

8. In general, would you say your quality of life is:

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

9. In general, how would you rate your physical health?

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

10. In general, how would you rate your mental health, including your mood and your ability to think?

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

11. In general, how would you rate your satisfaction with your social activities and relationships?

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

12. To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?

- ◯ 5= Completely
- ◯ 4= Mostly
- ◯ 3= Moderately
- ◯ 2= A little
- ◯ 1= Not at all

13. In the past 7 days, how would you rate your pain on average?

- ◯ 0= 0 No pain
- ◯ 1= 1
- ◯ 2= 2
- ◯ 3= 3
- ◯ 4= 4
- ◯ 5= 5
- ◯ 6= 6
- ◯ 7= 7
- ◯ 8= 8
- ◯ 9= 9
- ◯ 10= 10 worst pain imaginable

14. In the past 7 days, how would you rate your fatigue on average?

- ◯ 1= None
- ◯ 2= Mild
- ◯ 3= Moderate
- ◯ 4= Severe
- ◯ 5= Very severe

15. In the past 7 days, in general, please rate how well you carry out your usual social social activities and roles. (This includes activities at home, at work, and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)

- ◯ 5= Excellent
- ◯ 4= Very good
- ◯ 3= Good
- ◯ 2= Fair
- ◯ 1= Poor

16. In the past 7 days, how often have you been bothered by emotional problems such as feeling anxious, depressed, or irritable?

- ◯ 1= Poor
- ◯ 2= Never
- ◯ 3= Sometimes
- ◯ 4= Often
- ◯ 5= Always

17. In the past 7 days, have you been bothered by emotional problems such as feeling anxious, depressed, or irritable?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

Information and Birthing Options

This section will ask your opinion regarding the labor inforamtion you have recieved prior to this class and where you have recieved the most beneficial information from.

18. Which of the following provided you the MOST useful information regarding what to expect for labor and birth up until today?

- ◯ Family/ Friends
- ◯ Physicians
- ◯ Midwife/ Nurse Practitioner
- ◯ Childbirth Educator
- ◯ Books/ Magazines/ Websites/ Television

19. Has your health care provider offered you the option of labor induction? Elective induction of labor means starting labor for non-medical reasons.

- ◯ Yes
- ◯ No

Information and Birthing Options

20. In regards to a labor induction being offered to you, when did your health care provider discuss labor induction with you?

- ◯ At your first visit
- ◯ At your first trimester visit (10-12) week visit
- ◯ At you second trimester visit (13-24) week visit
- ◯ At your third trimester visit (25-40) week visit
- ◯ Other (please specify)

21. Are you planning on having your labor induced?

- ◯ Yes
- ◯ No

Information and Birthing Options

22. What is your main reason for scheduling a labor induction?

- ◯ My healthcare provider is concerned about the size of the baby.
- ◯ My healthcare provider is concerned about the baby's health.
- ◯ My healthcare provider is concerned about my health.
- ◯ I want relief from my pregnancy discomforts and want to get the pregnancy over with as soon as possible.
- ◯ I want to control the timing of the delivery (work, healthcare provider availability, partner availability, etc.).
- ◯ I am not sure.
- ◯ Other (please specify)

23. Up until today, do you feel that you have been provided unbiased information regarding labor induction?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

24. Up until today, do you feel that you have been provided unbiased information regarding spontaneous labor?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

25. Do you feel that your labor options are being decided by you?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

26. Do you feel that your labor options are being decided by your healthcare provider?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

27. Did you ever talk about an elective induction of labor with your physician or midwife? Elective induction of labor means starting labor for non-medical reasons.

- ☐ We never discussed inducing for convenience reasons.
- ☐ I asked for an elective induction.
- ☐ My physician/midwife advised against it/prefers not to do them
- ☐ My physician/midwife suggested an elective induction of labor
- ☐ I trusted whatever they suggested
- ☐ I did not get to ask questions about it
- ☐ I felt like I should just go along with it
- ☐ Other (please specify)

Appendix C

Post-test Survey

Consent for Participation

The following information is being collected to determine your thoughts and feelings in regards to labor induction and how it had effected your birthing choices. By completing this survey, you are consenting to participate in this study. The survey will take less than 10-minutes to complete. This study will collect the information you provide and evaluate the responses. Your responses will be confidential. You will not be penalized or rewarded for completing this survey. You are asked to answer all questions as honestly as possible and to the best of your ability. Any concerns you may have about this research project can be directed to Dr. Michele L. McCarroll, PhD at 330-375-4880 mccarrollm@summahealth.org or Mary Ann Craig, RN, BSN, 330-375-3173 craigm@summahealth.org. If you have questions regarding your rights as a research subject, please contact the Summa Health System Institutional Review Board at 330-375-4045 or irb@summahealth.org. Thank you!

Information and Birthing Options

***1. Study ID**

2. Which provided you the MOST useful information regarding what to expect for labor and birth after today's class?

- ◯ Family/ Friends
- ◯ Physicians
- ◯ Midwife/ Nurse Practitioner
- ◯ Childbirth Educator
- ◯ Books/ Magazines/ Websites/ Television

3. Has your health care provider offered you the option of labor induction?

- ◯ Yes
- ◯ No

4. In regards to labor induction being offered to you, when did your health care provider dicuss labor induction with you?

- ◯ At your first visit
- ◯ At your first trimester visit (10-12) week visit
- ◯ At your second trimester visit (13-24) week visit
- ◯ At your third trimester visit (25 -40) week visit
- ◯ Other (please specify)

5. Are you planning on having your labor induced?

- ◯ Yes
- ◯ No

6. What is your main reason for scheduling a labor induction?

- ◯ My care provider is concerned about the size of the baby.
- ◯ My care provider is concerned about the baby's health.
- ◯ My care provider is concerned about my health.
- ◯ I want relief from pregnancy discomforts/ get the pregnancy over with.
- ◯ I want to control the timing (work, healthcare provider availability, etc.).
- ◯ I am not sure.
- ◯ Other (please specify)

7. After today's class, do you feel that you have been provided unbiased information regarding labor induction?

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

8. After today's class, do you feel that you have been provided unbiased information regarding spontaneous labor?

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

9. Do you feel your labor options are being decided for you?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Stongly Agree

10. Do you feel your labor options are being decided by your health care provider?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

11. Did you ever talk about an elective induction with your physician or midwife? Elective induction of labor means starting labor for a non-medical reason.

- ☐ We never discussed inducing for convienience reasons.
- ☐ I asked for an elective induction.
- ☐ My physician/midwife advised against it/prefers not to do them.
- ☐ My physician/midwife suggested an elective induction.
- ☐ I trusted whatever they suggested.
- ☐ I did not get to ask questions about it.
- ☐ I feel like I should just go along with it.
- ☐ Other (please specify)

12. The educational material provided today about labor inductions and spontaneous labor was easy to understand...

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

13. After attending this class today, do you feel that you are more prepared to make a decision regarding your labor options?

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

14. Has the information provided today regarding labor induction differed from what you previously knew about labor induction?

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

15. The information provided today regarding labor induction helped you form a different decision on your labor choices...

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

16. Are you going to ask your care provider more information regarding labor options after today's class?

- ◯ Strongly disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly agree

Hospital Experience and Opinion

This section will ask your opinion about how you choose your health care provider.

17. Who makes your health care decisions for your health?

- ◯ You
- ◯ Your Spouse/Partner
- ◯ You and Your Spouse Together
- ◯ Your Parents
- ◯ Other (please specify)

18. Who makes the health care decisions for your spouse's/partner's health?

- ◯ You
- ◯ You and Your Spouse/Partner
- ◯ Your Spouse/Partner Only
- ◯ Their Parents
- ◯ Your Parents
- ◯ Other (please specify)

19. Does having your child at Summa impact your decisions in returning for future health care procedures?

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

20. I am more likely to visit Summa for my own health care needs since having a child here.

- ◯ Strongly Disagree
- ◯ Disagree
- ◯ Neutral
- ◯ Agree
- ◯ Strongly Agree

21. What makes you choose Summa to recieve your health care?

- [ ] My insurance
- [ ] My Friends
- [ ] My Family
- [ ] My Physician
- [ ] My previous experiences with Summa (had previous children here)
- [ ] I prefer Summa over other health care system choices in Northeast Ohio (please explain in other)
- [ ] Summa facilities are more clean, modern, and updated
- [ ] Other (please specify)

22. Have you delivered other children at a Summa facility?

- ◯ Yes
- ◯ No

23. What factors made your birthing experience memorable?

- [ ] the staff focus on patient safety
- [ ] the staff focus on quality care
- [ ] the food
- [ ] the visitation hours
- [ ] the room atmosphere/decor
- [ ] the nursing staff
- [ ] the physician staff
- [ ] Other (please specify)

24. Did you feel like you were given all the options for your labor and delivery experience? Like, did your doctors and nurses give you the risks and benefits (even numbers and percentages) for different procedures even if there was a clear choice? Examples: 1) induce or augment labor or wait for labor to come on its own? or 2)use a vacuum or forceps, keep pushing or have a c-section?

- ◯ Yes
- ◯ No
- ◯ Unsure
- ◯ Other (please specify)